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TECH CENTER 1600/2900

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RAW SEQUENCE LISTING
PATENT APPLICATION: US/09/656,640A

DATE: 09/19/2002
TIME: 17:28:29

Input Set : A:\GC584-2-SEQLIST.TXT
Output Set: N:\CRF3\09192002\I656640A.raw

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 4 <110> APPLICANT: Wang, Huaming
 5        van Gastel, Frans
 6        Aehle, Wolfgang
 7        Rodrigues, Ana
 8        Topozada, Amr
10 <120> TITLE OF INVENTION: Phenol Oxidizing Enzyme Variants
13 <130> FILE REFERENCE: GC584-2
15 <140> CURRENT APPLICATION NUMBER: US 09/656,640A
16 <141> CURRENT FILING DATE: 2000-09-07
18 <160> NUMBER OF SEQ ID NOS: 8
20 <170> SOFTWARE: FastSEQ for Windows Version 4.0
22 <210> SEQ ID NO: 1
23 <211> LENGTH: 1958
24 <212> TYPE: DNA
25 <213> ORGANISM: Stachybotrys chartarum
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30 ctcaccaaga ggcagacgca gctgagtcct ccctggcct tgtacgaagt gcctctgccg      180
31 atccctcctc tgaaggcgcc caagtagtaa gtacattcta taggctagca gagccaacgt     240
32 tgctaatcat tgcagtaccg tccccaaccc caacactgga gaggacatct tgtactacga     300
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35 tgtccgcttc gtgaacagcg gagagaacac ctctcccaac agcgtccact tgcacggctc     480
36 tttctctcga gctccctttg atggttgggc tgaggacact acccagcctg gcgagtacaa     540
37 ggattactac taccccaaca ggcaggctgc ccgcatgctt tggtaccatg accatgccat     600
38 gtccatcacc gccgagaacg cctacatggg tcaggctggt gtctacatga tccaggaccc     660
39 ggctgaggat gccctgaacc tccccagcgg ctacggcgag tttgatatcc ccttggttct     720
40 gactgccaag cgatacaacg cagacggcac tctcttctcc accaatgag aggtttccag      780
41 cttctggggt gacgttattc aagtggtaag ttgagcccat tgagatgctt cagatcctag     840
42 aagtatcgat gtatgaaatt gtgcatgctc taaccagtgc tatcacagaa cggtcagcct     900
43 tggcctatgc tcaacgtgca gccgcgcaag taccgcttcc gcttcctcaa cgctgccgtc     960
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45 caggtcattg ccgctgacgg tggtctgctt gagggccctg ttgacactga cactctgtac    1080
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49 gtgcctgcca acctccgaga tgttcctttc cccgagggcg gcaactggga ccccgcaaac    1320
50 cccactgatg acgagacttt caccttcggc cgtgctaatg gacagtggac aatcaacgga    1380
51 gttaccttct cggatgtcga gaaccgtctg ctccgcaatg tgccccgcga cactgttgag    1440
52 atctggcgac ttgagaacaa ctccaacggt tggactcacc ctgttcacat tcacctcgtt    1500
53 gacttccgag tcctttctcg ttccactgcc cgtggagtcg agccttatga ggctgctggt    1560
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57 ctttcaatgt cactgttctc ggtgactatg gctacaacta caccgagttc attgaccccca   1800
58 tggagcctct ctggaggccc cgccccttcc tcctcggaga gttcgagaat ggctcgggtg    1860
59 acttcagcga gcttgccatc actgaccgca ttcaggagat ggctagcttc aaccctacg     1920
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63 <211> LENGTH: 583
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71              20                  25                  30
72 Met Pro Ser Gly Leu Thr Lys Arg Gln Thr Gln Leu Ser Pro Pro Leu
73          35                  40                  45
74 Ala Leu Tyr Glu Val Pro Leu Pro Ile Pro Pro Leu Lys Ala Pro Asn
75      50                  55                  60
76 Thr Val Pro Asn Pro Asn Thr Gly Glu Asp Ile Leu Tyr Tyr Glu Met
77 65                  70                  75                  80
78 Glu Ile Arg Pro Phe Ser His Gln Ile Tyr Pro Asp Leu Glu Pro Ala
79              85                  90                  95
80 Asn Met Val Gly Tyr Asp Gly Met Ser Pro Gly Pro Thr Ile Ile Val
81              100                 105                 110
82 Pro Arg Gly Thr Glu Ser Val Val Arg Phe Val Asn Ser Gly Glu Asn
83          115                 120                 125
84 Thr Ser Pro Asn Ser Val His Leu His Gly Ser Phe Ser Arg Ala Pro
85      130                 135                 140
86 Phe Asp Gly Trp Ala Glu Asp Thr Thr Gln Pro Gly Glu Tyr Lys Asp
87 145                 150                 155                 160
88 Tyr Tyr Tyr Pro Asn Arg Gln Ala Ala Arg Met Leu Trp Tyr His Asp
89              165                 170                 175
90 His Ala Met Ser Ile Thr Ala Glu Asn Ala Tyr Met Gly Gln Ala Gly
91              180                 185                 190
92 Val Tyr Met Ile Gln Asp Pro Ala Glu Asp Ala Leu Asn Leu Pro Ser
93          195                 200                 205
94 Gly Tyr Gly Glu Phe Asp Ile Pro Leu Val Leu Thr Ala Lys Arg Tyr
95      210                 215                 220
96 Asn Ala Asp Gly Thr Leu Phe Ser Thr Asn Gly Glu Val Ser Ser Phe
97 225                 230                 235                 240
98 Trp Gly Asp Val Ile Gln Val Asn Gly Gln Pro Trp Pro Met Leu Asn
99              245                 250                 255
100 Val Gln Pro Arg Lys Tyr Arg Phe Arg Phe Leu Asn Ala Ala Val Ser
101              260                 265                 270
102 Arg Ser Phe Ala Leu Tyr Leu Ala Thr Ser Glu Asp Ser Glu Thr Arg
103          275                 280                 285
104 Leu Pro Phe Gln Val Ile Ala Ala Asp Gly Gly Leu Leu Glu Gly Pro
105          290                 295                 300
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108 Val Ile Asp Phe Ser Thr Phe Ala Gly Gln Ser Ile Asp Ile Arg Asn
109             325             330             335
110 Leu Pro Gly Ala Asp Gly Leu Gly Val Glu Pro Glu Phe Asp Asn Thr
111             340             345             350
112 Asp Lys Val Met Arg Phe Val Val Asp Glu Val Leu Glu Ser Pro Asp
113             355             360             365
114 Thr Ser Glu Val Pro Ala Asn Leu Arg Asp Val Pro Phe Pro Glu Gly
115     370             375             380
116 Gly Asn Trp Asp Pro Ala Asn Pro Thr Asp Asp Glu Thr Phe Thr Phe
117 385             390             395             400
118 Gly Arg Ala Asn Gly Gln Trp Thr Ile Asn Gly Val Thr Phe Ser Asp
119             405             410             415
120 Val Glu Asn Arg Leu Leu Arg Asn Val Pro Arg Asp Thr Val Glu Ile
121             420             425             430
122 Trp Arg Leu Glu Asn Asn Ser Asn Gly Trp Thr His Pro Val His Ile
123     435             440             445
124 His Leu Val Asp Phe Arg Val Leu Ser Arg Ser Thr Ala Arg Gly Val
125     450             455             460
126 Glu Pro Tyr Glu Ala Ala Gly Leu Lys Asp Val Val Trp Leu Ala Arg
127 465             470             475             480
128 Arg Glu Val Val Tyr Val Glu Ala His Tyr Ala Pro Phe Pro Gly Val
129             485             490             495
130 Tyr Met Leu His Cys His Asn Leu Ile His Glu Asp His Asp Met Met
131             500             505             510
132 Ala Ala Phe Asn Val Thr Val Leu Gly Asp Tyr Gly Tyr Asn Tyr Thr
133             515             520             525
134 Glu Phe Ile Asp Pro Met Glu Pro Leu Trp Arg Pro Arg Pro Phe Leu
135     530             535             540
136 Leu Gly Glu Phe Glu Asn Gly Ser Gly Asp Phe Ser Glu Leu Ala Ile
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151 gatcggcggc agctctgtcg atgccagatc cgttgctggt cgatcgacag acatgccttc   180
152 cggtctcacc aagaggcaga cgcagctgag tcctcccctg gccttgtacg aagtgcctct   240
153 gccgatccct cctctgaagg cgcccaagta gtaagtacat tctataggct agcagagcca   300
154 acgttgctaa tcattgcagt accgtcccca accccaacac tggagaggac atcttgtact   360
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159 acaaggatta ctactacccc aacaggcagg ctgcccgcat gctttggtac catgaccatg    660
160 ccatgtccat caccgccgag aacgcctaca tgggtcaggc tggtgtctac atgatccagg    720
161 acccggctga ggatgccctg aacctcccca gcggctacgg cgagtttgat atccccttgg    780
162 ttctgactgc caagcgatac aacgcagacg gcactctctt ctccaccaat ggagaggttt    840
163 ccagcttctg gggtgacgtt attcaagtgg taagttgagc ccattgagat gcttcagatc    900
164 ctagaagtat cgatgtatga aattgtgcat gctctaacca gtgctatcac agaacggtca    960
165 gccttggcct atgctcaacg tgcagccgcg caagtaccgc ttccgcttcc tcaacgctgc   1020
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167 cttccaggtc attgccgctg acggtggtct gcttgagggc cctgttgaca ctgacactct   1140
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170 taacactgac aaggtcatgc gattcgtcgt tgatgaagtc cttgagtcgc ccgacacttc   1320
171 tgaggtgcct gccaacctcc gagatgttcc tttccccgag ggcggcaact gggaccccgc   1380
172 aaaccccact gatgacgaga ctttcacctt cggccgtgct aatggacagt ggacaatcaa   1440
173 cggagttacc ttctcggatg tcgagaaccg tctgctccgc aatgtgcccc gcgacactgt   1500
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177 cgctcctttc ccgtaagttc tcgccttta cctaactggt tttcactcat gctaacatct   1740
178 acaagtggtg tctacatgtt gcactgccac aacctgatcc acgaggacca cgacatgatg   1800
179 gctgctttca atgtcactgt tctcggtgac tatggctaca actacaccga gttcattgac   1860
180 cccatggagc ctctctggag gccccgcccc ttcctcctcg gagagttcga gaatggctcg   1920
181 ggtgacttca gcgagcttgc catcactgac cgcattcagg agatggctag cttcaacccc   1980
182 tacgcccagg ctgatgatga tgccgctgag gagtaaatat gatgatcgtc gaatgattta   2040
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186 <211> LENGTH: 572
187 <212> TYPE: PRT
188 <213> ORGANISM: Myrothecium verucaria
190 <400> SEQUENCE: 4
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194             20                  25                  30
195 Gly His Leu Phe Lys Arg Val Ala Gln Ile Ser Pro Gln Tyr Pro Met
196         35                  40                  45
197 Phe Thr Val Pro Leu Pro Ile Pro Pro Val Lys Gln Pro Arg Leu Thr
198     50                  55                  60
199 Val Thr Asn Pro Val Asn Gly Gln Glu Ile Trp Tyr Tyr Glu Val Glu
200 65                  70                  75                  80
201 Ile Lys Pro Phe Thr His Gln Val Tyr Pro Asp Leu Gly Ser Ala Asp
202             85                  90                  95
203 Leu Val Gly Tyr Asp Gly Met Ser Pro Gly Pro Thr Phe Gln Val Pro
204             100                 105                 110
205 Arg Gly Val Glu Thr Val Val Arg Phe Ile Asn Asn Ala Glu Ala Pro
206         115                 120                 125
207 Asn Ser Val His Leu His Gly Ser Phe Ser Arg Ala Ala Phe Asp Gly
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                    RAW SEQUENCE LISTING              DATE: 09/19/2002
                    PATENT APPLICATION:  US/09/656,640A    TIME: 17:28:29

                    Input Set : A:\GC584-2-SEQLIST.TXT
                    Output Set: N:\CRF3\09192002\I656640A.raw

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212                  165                 170                    175
213  His Ile Thr Ala Glu Asn Ala Tyr Arg Gly Gln Ala Gly Leu Tyr Met
214                  180                 185                 190
215  Leu Thr Asp Pro Ala Glu Asp Ala Leu Asn Leu Pro Ser Gly Tyr Gly
216            195                 200                 205
217  Glu Phe Asp Ile Pro Met Ile Leu Thr Ser Lys Gln Tyr Thr Ala Asn
218        210                 215                 220
219  Gly Asn Leu Val Thr Thr Asn Gly Glu Leu Asn Ser Phe Trp Gly Asp
220  225                 230                 235                    240
221  Val Ile His Val Asn Gly Gln Pro Trp Pro Phe Lys Asn Val Glu Pro
222                  245                 250                 255
223  Arg Lys Tyr Arg Phe Arg Phe Leu Asp Ala Ala Val Ser Arg Ser Phe
224                  260                 265                 270
225  Gly Leu Tyr Phe Ala Asp Thr Asp Ala Ile Asp Thr Arg Leu Pro Phe
226            275                 280                 285
227  Lys Val Ile Ala Ser Asp Ser Gly Leu Leu Glu His Pro Ala Asp Thr
228        290                 295                 300
229  Ser Leu Leu Tyr Ile Ser Met Ala Glu Arg Tyr Glu Val Val Phe Asp
230  305                 310                 315                    320
231  Phe Ser Asp Tyr Ala Gly Lys Thr Ile Glu Leu Arg Asn Leu Gly Gly
232                  325                 330                 335
233  Ser Ile Gly Gly Ile Gly Thr Asp Thr Asp Tyr Asp Asn Thr Asp Lys
234                  340                 345                 350
235  Val Met Arg Phe Val Val Ala Asp Asp Thr Thr Gln Pro Asp Thr Ser
236            355                 360                 365
237  Val Val Pro Ala Asn Leu Arg Asp Val Pro Phe Pro Ser Pro Thr Thr
238        370                 375                 380
239  Asn Thr Pro Arg Gln Phe Arg Phe Gly Arg Thr Gly Pro Thr Trp Thr
240  385                 390                 395                    400
241  Ile Asn Gly Val Ala Phe Ala Asp Val Gln Asn Arg Leu Leu Ala Asn
242                  405                 410                 415
243  Val Pro Val Gly Thr Val Glu Arg Trp Glu Leu Ile Asn Ala Gly Asn
244                  420                 425                 430
245  Gly Trp Thr His Pro Ile His Ile His Leu Val Asp Phe Lys Val Ile
246            435                 440                 445
247  Ser Arg Thr Ser Gly Asn Asn Ala Arg Thr Val Met Pro Tyr Glu Ser
248        450                 455                 460
249  Gly Leu Lys Asp Val Val Trp Leu Gly Arg Arg Glu Thr Val Val Val
250  465                 470                 475                    480
251  Glu Ala His Tyr Ala Pro Phe Pro Gly Val Tyr Met Phe His Cys His
252                  485                 490                 495
253  Asn Leu Ile His Glu Asp His Asp Met Met Ala Ala Phe Asn Ala Thr
254            500                 505                 510
255  Val Leu Pro Asp Tyr Gly Tyr Asn Ala Thr Val Phe Val Asp Pro Met
256            515                 520                 525
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RAW SEQUENCE LISTING ERROR SUMMARY   DATE: 09/19/2002
PATENT APPLICATION: US/09/656,640A   TIME: 17:28:30

Input Set : A:\GC584-2-SEQLIST.TXT
Output Set: N:\CRF3\09192002\I656640A.raw

<u>Please Note:</u>
Use of n and/or Xaa have been detected in the Sequence Listing. Please review the
Sequence Listing to ensure that a corresponding explanation is presented in the <220>
to <223> fields of each sequence which presents at least one n or Xaa.

Seq#:7; N Pos. 12
Seq#:8; N Pos. 12,18